

PART 611-3: BACKGROUND AND TRENDS

3-1 HISTORICAL GROWTH OF THE TRANSPORTATION SYSTEM

Early settlement and the spread of agriculture to more than 80 percent of the state required primitive roads to move products to markets. Water-driven textile mills and other manufacturing along rivers also depended upon efficient transportation of goods, by road, water, and railroad.

As the industrial age progressed and immigration increased, the state saw a swelling of population in central cities. Infrastructure investments were made in these areas. Radiating from Providence, a network of rural turnpikes was gradually converted to public roads.

Private companies developed trolley lines in the late 1800s, first horse-drawn, then electric. Ridership rose through the early 1900s and flourished again during World War II.

With the advent of the automobile, road building also grew from 1900 on. The state had constructed 800 miles of highways by 1941.

After World War II, trolleys were replaced by buses. As suburban development spread and auto ownership increased, however, ridership on the private transit system fell drastically. In 1964 the state created the Rhode Island Public Transit Authority (RIPTA). RIPTA doubled the route system by 1986, to 447 miles, making it a statewide system. Expansion was supported not only by the state but also by federal operating assistance, which began in FY 1975. Since the 1970s a coordinated paratransit system has developed in the state, too.

Postwar suburbanization and economic growth also stimulated highway development. Federal legislation in 1956 funded the Interstate system, and Rhode Island's three Interstate highways (I-95, I-195, and I-295) were open by 1975. State and local road mileage grew from 4,400 to 5,900 between 1962 and 1995, most of the total consisting of local roads and streets.

Results of this history are:

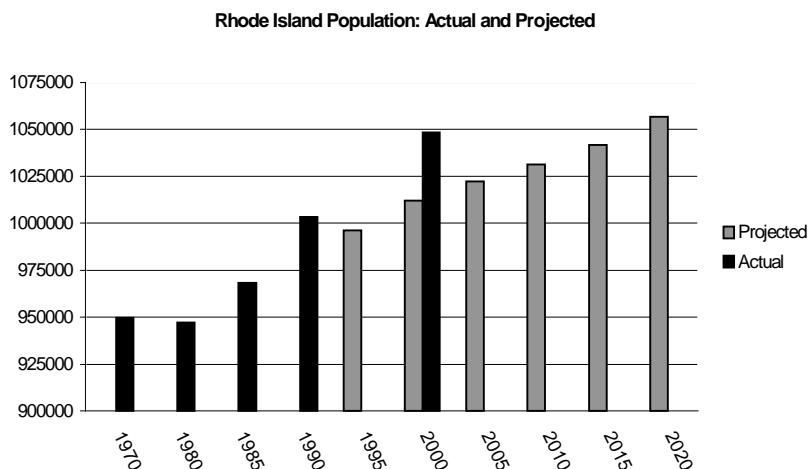
- an extensive road network, including arterial highways and local streets, with few areas lacking transportation access;
- many older urban roads and bridges, which tend to be expensive to maintain and difficult to upgrade to meet current demands;
- a traditional, fixed-route bus system based on pre-1950s development patterns, with Providence as the hub, which has limited coverage in new growth areas and seriously reduced evening and weekend services;
- potential for new economic development in the region as Amtrak's high-speed rail project is completed; and
- potential to capitalize on new trends toward intermodalism as an economic development generator and as an alternative to automobiles

The Regional Context

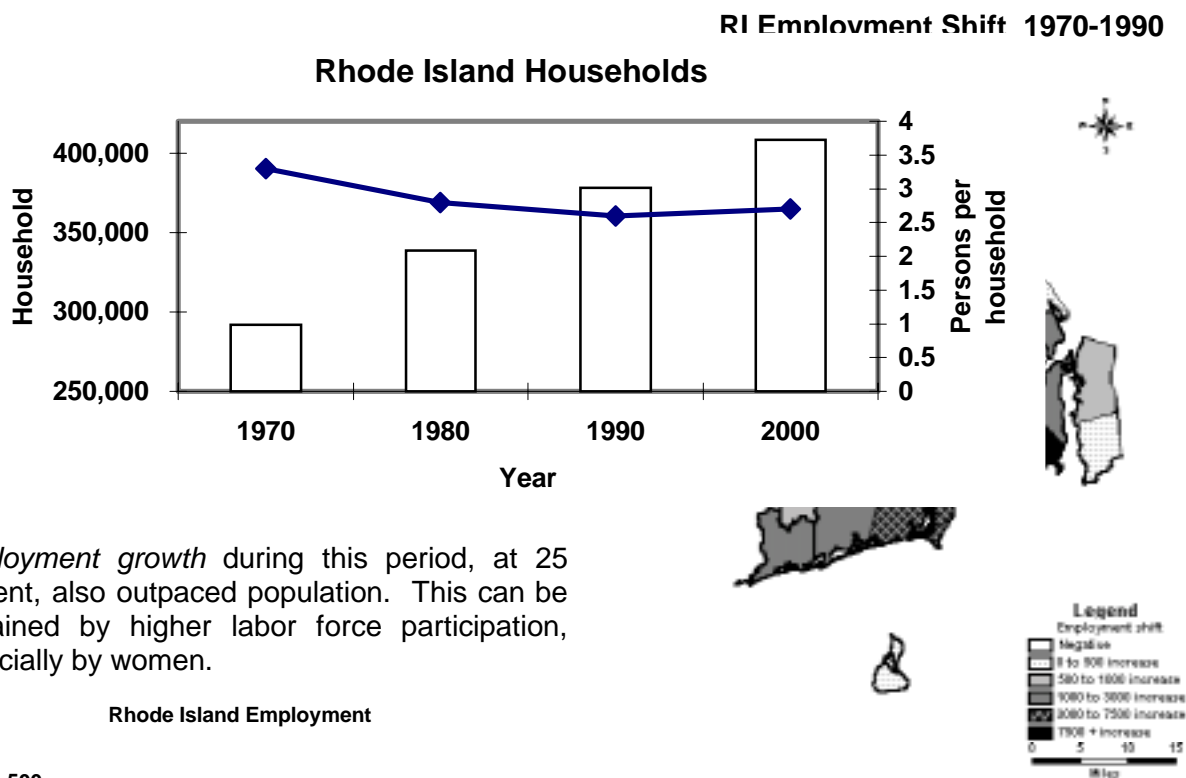
Rhode Island's location in the heavily populated region between Washington, DC, and Boston has contributed to development of its marine, road, and rail transportation. Today, Rhode Island's transportation system exists as part of a larger system serving New England and the Northeastern United States region. Rhode Island is part of the Amtrak Northeast Corridor and the I-95 highway corridor. These, and other routes serve as a conduit for traffic between New York, Boston, and Cape Cod. Rhode Island is a major destination for tourist traffic from outside our State. The regional analysis conducted by the R.I. Economic Policy Council documented the crucial importance of regional transportation linkages to Rhode Island's future economic strength, identifying the state's location along the major highway, high speed rail, and proximity to international shipping lanes as a strategic asset. As economic and transportation linkages have grown stronger within the region, commuting patterns have shifted too. While no definitive studies have been done, indications are that many Rhode Islanders are commuting to jobs in the metropolitan Boston area, and in southeastern Connecticut. Projects such as extension of commuter rail service and development of the intermodal train station at T.F. Green Airport are designed to capitalize on these strategic strengths.

3-2 DEMOGRAPHIC TRENDS

Population growth in Rhode Island was only 6 percent from 1970 to 1990. However, initial results from the 2000 Census indicate that between 1990 and 2000, the state's population, spurred by in-migration, grew by 4.5%. Statewide projections used in this plan were developed before the 2000 Census, and call for a relatively low rate of future growth (4.5 % percent growth from 2000 to 2020). Reappraisal of the state's current projections will be performed before the next complete revision of the transportation plan (2004), and will fully consider and reflect the detailed results of the 2000 Census. (Population alone does not determine travel demand. Other factors, such as vehicle trips, and average trip length must also be considered.)



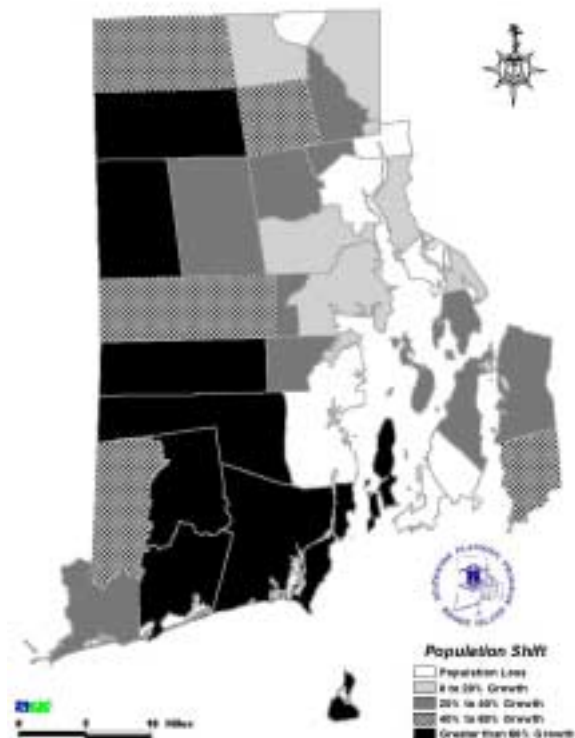
Number of households increased much faster than population, growing by 40 percent from 1970 to 2000. As the population was spread out in a larger number of separate households, average household size declined from 3.3 to 2.7 people



Employment growth during this period, at 25 percent, also outpaced population. This can be explained by higher labor force participation, especially by women.

Changes in location of population and employment have been significant.

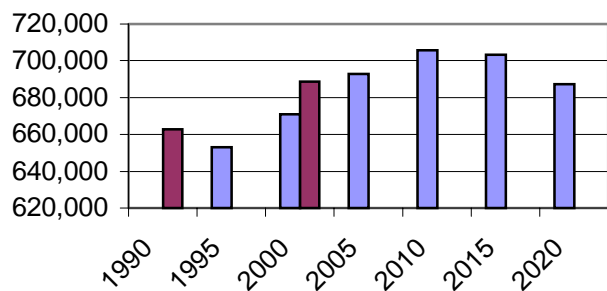
RI Population Shift 1970-2000



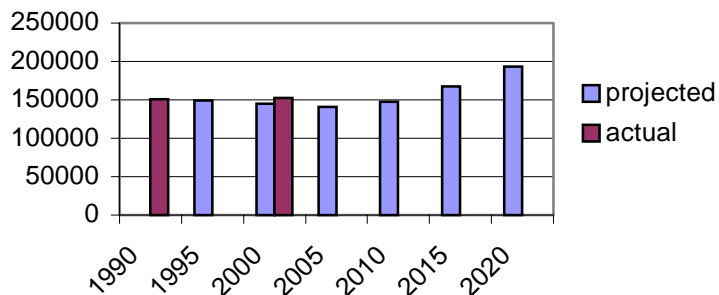
Population has shifted from older cities to suburban and rural towns, especially to the west and south. Employment (by place of work) also decentralized, but more to the inner ring of suburbs.

The age structure of the population is changing. The working-age group (15-64 years old) is projected to increase by 2020 but to peak in 2010. The 65-and-over group will drop slightly until 2005 but then rise sharply by 2020, to a level 28 percent higher than in 1990. Increasing proportions are frail elderly.

Age Group 15 to 64



Age Group 65+



3-3 TRAVEL TRENDS

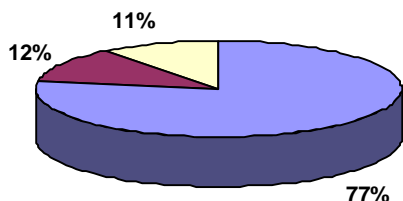
Rhode Island's size and development pattern affect how we travel. In 1990 Rhode Islanders averaged a work trip of about 19 minutes and commuted as follows:

RI work trips by mode, 1990

Drive alone	77.9%
Carpool	12.1%
Bike or walk	4.5%
Bus	2.1%
Work at home	2.1%
Taxi, other	1.0%
Rail	0.3%

Nationally and in this state, use of the auto for work trips has increased over the last 20 years (and is higher in Rhode Island). Travel times have increased slightly (and are lower in Rhode Island). These trends result partly from the dispersion of homes and workplaces to the suburbs. The following times are for single-occupant vehicles (SOV).

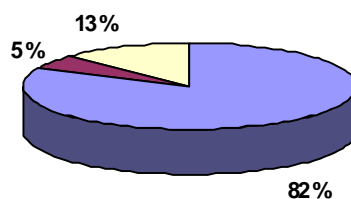
1970 US Travel Modes



Auto Transit Other

SOV travel time: 19.2

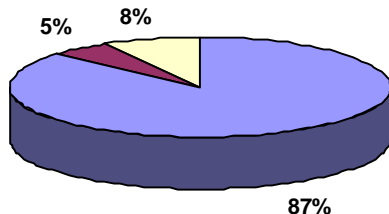
1970 RI Travel Modes



Auto Transit Other

SOV travel time: 18.3

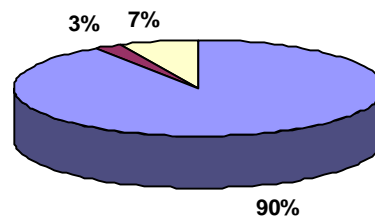
1990 US Travel Modes



Auto Transit Other

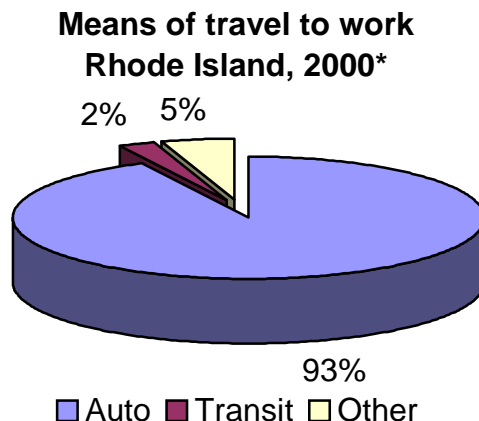
SOV travel time: 22.7

1990 RI Travel Modes

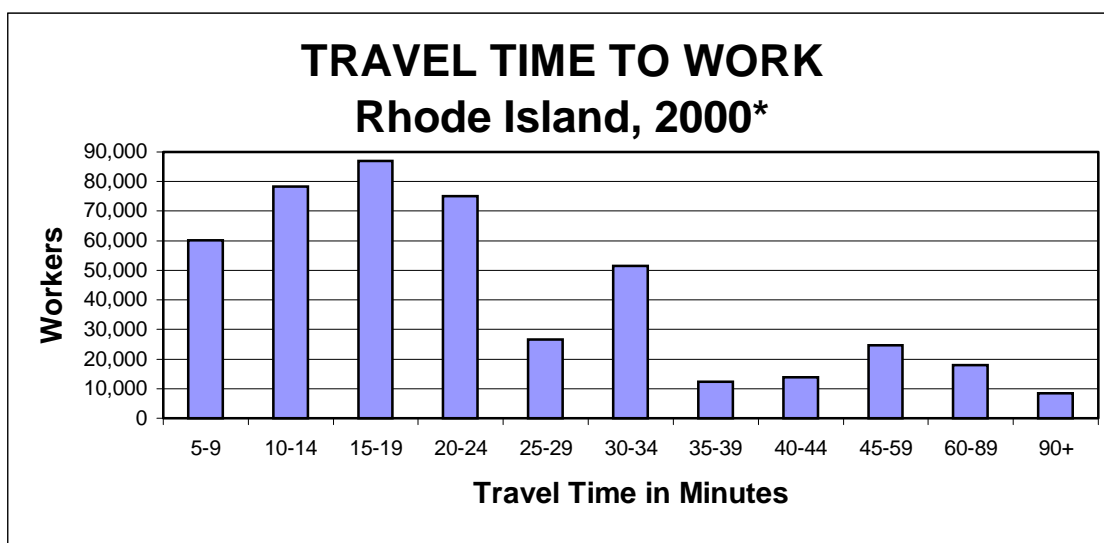


Auto Transit Other

SOV travel time: 19.6



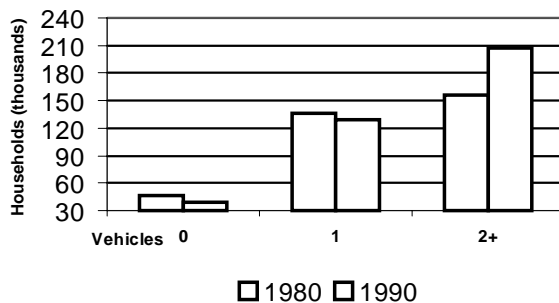
* Note: Source American Community Survey 2001 Non-RI data with trends applied to RI population using ACS methodology.



* Note: Average travel time calculated at 23.5 minutes. Data source American Community Survey 2001. Non-RI data with trends applied to RI population using ACS methodology.

Auto ownership has increased dramatically. By 1990, more than half of the households in the state had two or more vehicles, up 33 percent from 1980. The numbers vary greatly by city and town. In Providence, 23 percent of households had no vehicles, while in some rural towns only 1 or 2 percent are without vehicles.

Households by Vehicle Rhode Island, 1980 and 1990

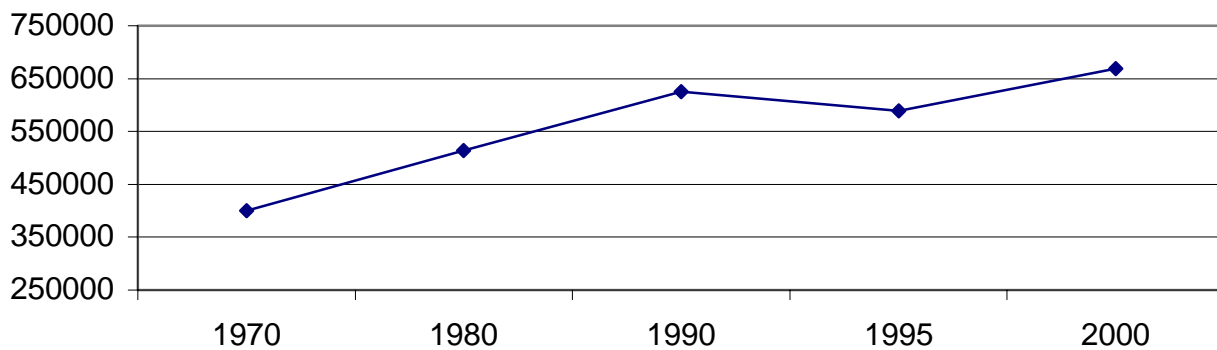


RI Auto Ownership

	1980	1990
Households with:		
0 vehicles	14%	11%
1 vehicle	40%	35%
2+ vehicles	46%	55%

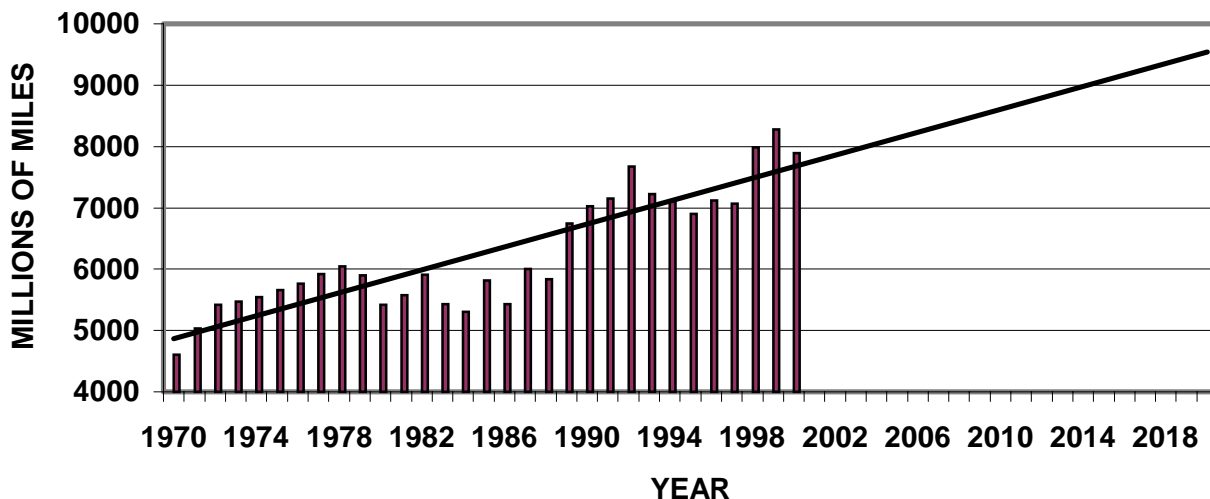
The number of auto registrations in the state increased by 67.3 percent from 1970 to 2000. (A slight decline in the early 1990s may have been due to the decline in the state's economy during this period and/or to the imposition of mandatory auto insurance.)

Rhode Island Automobile Registrations



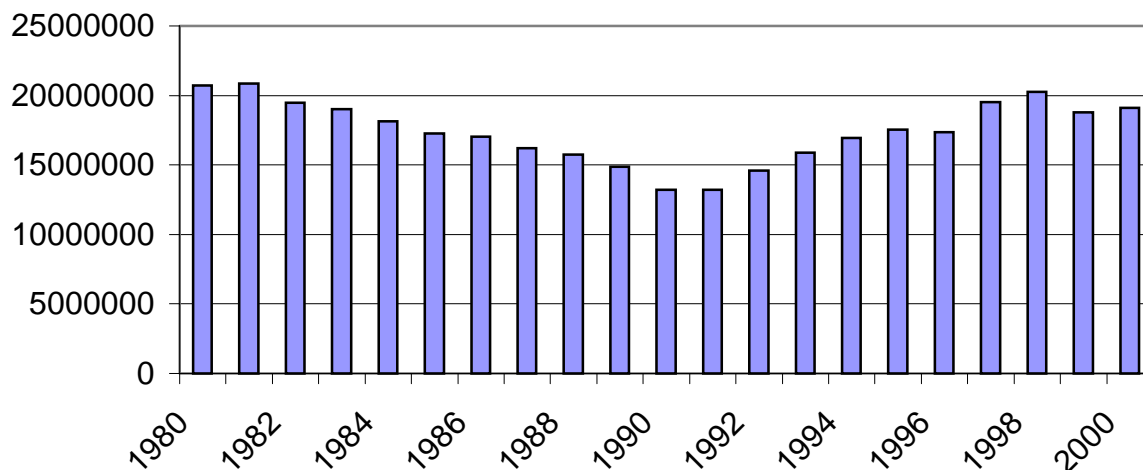
Annual vehicle miles of travel (VMT) on Rhode Island roads since 1970 have increased by 90 percent. A similar indicator, gasoline consumption, has shown a gradual rise, although it is also affected by changes in fuel economy.

HPMS VMT 1970 - 2000



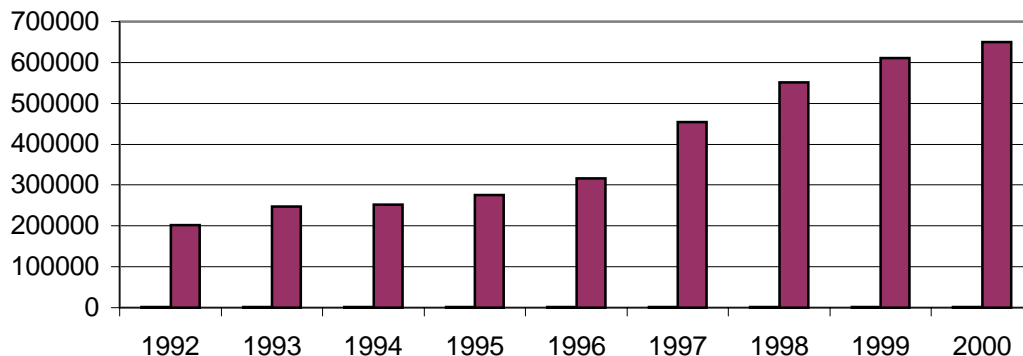
Bus ridership system wide rose through most of the 1990s, to a peak of 20.2 million in 1997. In 1999, RIPTA changed its zone-based fare system to a single base fare for all of Rhode Island. This increased fares for some riders, resulting in an increase in total revenues, but a 7 percent decline in ridership in FY 1999. In FY 2000, ridership increased by 1.5 percent to 19.1 million passengers, or 61,000 on an average day. Part of the increase is due to Rlte Care (low-income) pass usage.

RIPTA RIDERSHIP



The RIdle Program is Rhode Island's statewide paratransit service providing door-to-door service to eligible elderly and disabled residents. RIdle's total trips for FY 2000 were 650,518.

RIdle Trips



National travel trends are documented periodically in the Nationwide Personal Transportation Survey (NPTS). The 1995 edition showed that most daily travel is now for non-work purposes, such as personal business, social, school, and recreational purposes. Travel by women is increasing. More workers are making intermediate stops on the way to and from work, known as "trip chaining." In 1995 about 15 percent of commuters made at least one stop on the way to work, and 30 percent made at least one stop returning. This explains, in part, the growth of solo commuting and decline in vehicle occupancy; i.e., less carpooling.

Telecommuting is beginning to have a slight measurable impact on daily work travel. It has the potential to provide significant transportation-related public benefits in the next decade. Telecommuting is now practiced by approximately 2 million workers and could reach 7.5 to 15 million within a decade. (The extent in Rhode Island is not known.)

Population, Household, Employment, and Auto Registration Changes in Rhode Island: 1970-2000

	1970	1980	1970-80	1990	1980-90	2000	1990-2000
Population	949,723	947,154	-0.3%	1,003,464	5.95%	1,048,319	4.47%
Households	291,965	338,590	16.0%	377,977	22.44%	408,424	8.06%
Persons per household	3.07	2.7	-12.1%	2.55	-10.35%	2.47	-3.14%
Autos registrations	400,000	513,808	28.5%	625,565	21.75%	669,300	6.99%
Autos per person	0.42	0.54	28.6%	0.62	15.45%	0.64	2.41%
Auto per household	1.26	1.35	7.1%	1.51	11.77%	1.64	8.60%
Employment	344.1	398.3	15.8%	451.2	13.28%	475.7	5.43%

Note: Employment is Establishment
Annual Average. Source RIDLT.

3-4 THE TRANSPORTATION SYSTEM

Three state-level agencies have primary responsibility for construction, operation, and maintenance of Rhode Island's transportation system. The Rhode Island Department of Transportation (RIDOT) builds and maintains the most important roads. RIPTA operates all bus transit service. The Rhode Island Airport Corporation manages all publicly owned airports. Other transportation providers, and local public works departments, are responsible for additional facilities and services.

The state road network (in route miles, not lane miles -- which would be higher) totals over 6,000 miles, and includes:

- three Interstate highways totaling 70 miles,
- arterial and collector roads totaling 1,099 miles, maintained by the state,
- arterial and collector roads totaling 672 miles, maintained by 39 cities and towns, and
- local streets totaling 4,177 miles, maintained by 39 cities and towns.

The mixed maintenance responsibilities for arterials and collectors reflect the historical evolution of the highway system. The fact that some arterials are locally maintained, while the state maintains lower-level collectors is as much an artifact of history as it is based upon highway functional classification. Legislation basing highway jurisdiction on functional classification and providing for jurisdictional transfers was passed in the early 1990s, but funding to implement the program was not provided.

RIDOT maintains 603 bridges, and another 146 are maintained by cities and towns (greater than 20 feet long). Two of the largest bridges in the state, the Mt. Hope Bridge, and the Pell Bridge at each end of Aquidneck Island, are operated by the Rhode Island Turnpike and Bridge Authority.

The RIPTA bus fleet includes 230 buses -- 200 full-size buses, 15 compressed-natural gas(CNG)-powered trolleys, and five smaller buses used for fixed-route services, and 10 demand-response vehicles. All are equipped for people with disabilities; all full size buses have bicycle racks.

The core of RIPTA operations is fixed route service. Fixed routes serve 36 of the 39 cities and towns, connecting Providence with Woonsocket, Newport, Westerly, and the University of Rhode Island. Twenty-six park-and-ride lots have bus service. RIPTA provides fixed route transit service to two of Rhode Island's three train stations, and demand-response service to the third. T.F. Green Airport is also served by RIPTA's fixed route system.

Levels of service on RIPTA's fixed routes varies from route to route, depending on demand; some routes offer only weekday service while other routes operate evenings and Saturdays and Sundays. Additional RIPTA services include:

- The Providence LINK trolley offers two routes in the downtown area of the state's largest city.
- Ride and Ride Care programs continue to focus on providing demand-responsive transportation to low income, elderly and disabled people. Ride contracts for services from a broker which manages the requests for service and the contracts with carriers to operate 107 vans around the state.

- RIPTA maintains roadside passenger amenities, including three terminals, at Providence, Newport and Pawtucket, bus stop signs and shelters. Two hundred sixty shelters are in service, 40 are scheduled for installation and 150 additional shelters will be located in the future.
- Seasonal bus service to the state's major beaches has been offered since 1976.
- In 2000, RIPTA initiated flexible service in several communities. This so-called "Flexservice" is a hybrid transit service, in which smaller vehicles provide demand response (reservation) service linking patrons within a designated zone with scheduled stops on longer-distance, fixed route transit lines. It is designed to respond to transit needs in more rural areas and to provide services supporting the state's program to encourage the transition from welfare to work.
- RIPTA has recently finalized a pilot program for providing passes for college students as part of regular student fees.
- Two of the demand-response zones provide job access services in support of the state's "welfare to work" efforts.

Demand-responsive and subscription-accessible service is offered by the RIde system, using contracted private operators in a coordinated statewide network. Private operators and a few municipalities supplement this service. RIde provides services for elderly, disabled, and low-income individuals.

Privately operated intercity buses link Providence with Boston, New York, Albany, and Cape Cod.

Amtrak provides passenger rail service in the Northeast Corridor, with eight trains operating each day in each direction. All trains stop in Providence, and six trains stop at West Kingston and Westerly. Amtrak carried 1,785,000 through passengers in the Boston - New York section of the Northeast Corridor in 1996. Passengers for the three Rhode Island stations totaled 395,000 in 2000. Amtrak has completed electrification of the shoreline route, and high-speed *Acela* rail service utilizing new equipment was initiated early in 2001.

Under the Pilgrim Partnership II Agreement that is in effect until 2009, RIDOT and the Massachusetts Bay Transportation Authority (MBTA) continue to work together to provide commuter rail services to Rhode Island. Under this agreement, the MBTA operates weekday commuter rail service between Boston and Providence carrying about 825 inbound passengers, plus an additional 1700 Rhode Islanders who board in Attleboro and South Attleboro, MA. There are currently eleven round trips per weekday from Providence. A component of this Agreement is the relocation of the MBTA layover facility from Attleboro, MA to Pawtucket, RI. The layover facility project will consist of design and construction of a six (6) track commuter rail yard for the purpose of overnight layover/storage of commuter rail equipment to serve both the existing Providence-Boston service and Rhode Island's future South County Commuter Rail Service. This project will be funded with FTA New Start, RIDOT rail modernization and MBTA funds.

The Providence and Worcester Railroad is a major regional freight carrier, connecting Rhode Island to Worcester, MA. The Seaview Railroad operates switching service at the Quonset-Davisville Port and Commerce Park in North Kingstown.

A "Third Track" project is being constructed parallel to the Amtrak Main Line to serve freight movements between Central Falls and Quonset Davisville. The goals of this Freight Rail Improvement Program (FRIP) are: 1) to preserve and expand the capabilities of the rail system to accommodate double-stack container and tri-level automobile carrier rail cars through increased vertical clearances, and 2) to add capacity through the construction of additional tracks to address the anticipated restrictions on freight operations expected as a result of an increase in frequency of Amtrak's passenger operations. New rail rights-of-way will be constructed, existing rights-of-way will be modified and/or rehabilitated, and forty-five structures will be changed between the Boston Switch and Davisville, Rhode Island along the Amtrak Northeast Corridor mainline. The distance between these points is twenty-two miles; seventeen miles of track will be available for freight operations and approximately five miles will be shared by freight and Amtrak intercity passenger operations. As part of this program track will be lowered at thirty-seven highway bridges, two highway and one pedestrian bridge will be raised, one pedestrian bridge will be removed, track will be lowered under two station structures, parallel bridges will be constructed at two sites, three culvert crossings will be modified and approximately 16,000 linear feet of retaining wall will be constructed.

Common carrier trucking terminals are concentrated in the Providence metropolitan area and provide service throughout the state and nation.

Marine transportation is the oldest form of transportation in the state; Newport was once one of the nation's major ports. The Port of Providence handled liquid, dry, and breakbulk cargoes totaling nearly 1.7 million tons in 1994. New cars arrive at Quonset-Davisville for shipment throughout the region. The Rhode Island Economic Development Corporation plans to add a container port at this location.

Ferry service operates year-round between Point Judith and Block Island and seasonally among Providence, Newport, and Block Island, and between Bristol and Prudence Island. Two water transportation demonstration projects are underway to test the potential of continued water transportation services in the state. Commuter ferry service between Pawtucket and Providence is offered through mid-2001 under a demonstration grant. RIPTA initiated a demonstration ferry service from Providence to Newport in 2000 on a summer season basis. The long term feasibility of this service will be evaluated over the next two years.

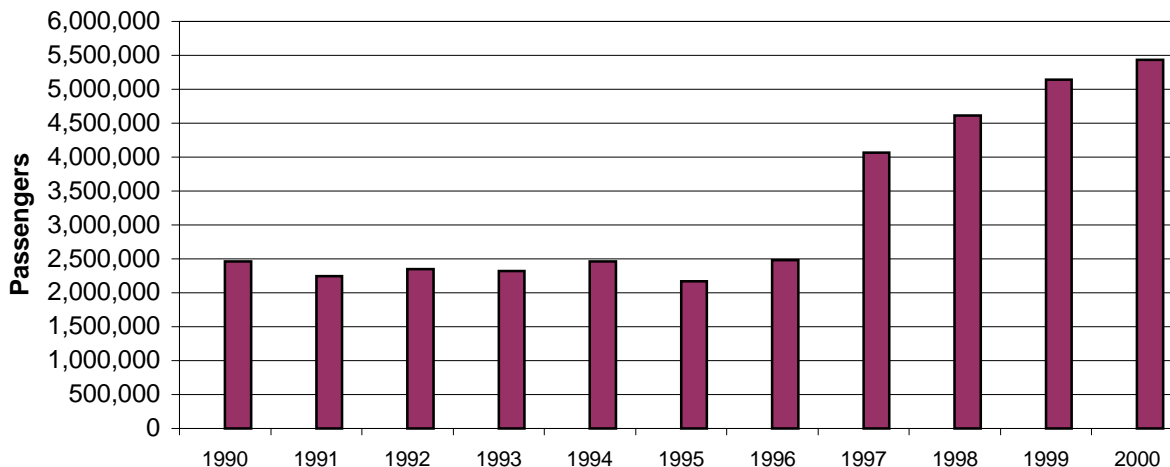
The state built the 14.5-mile East Bay Bike Path from Providence to Bristol and is constructing several more, including the Blackstone River Path, the South County Bike Path, and the Washington Secondary Bike Path. Sections of these paths are now complete and open to the public. The multi-state East Coast Greenway passes through Rhode Island and is being developed in segments. RIDOT is developing the Woonasquatucket--Northwest Trail bikeway and is continuing its commitment to accommodate bicycles on existing roadways through "bicycle tolerant design" where practical; for example, refitting Burma Road in Newport and Middletown in cooperation with the U.S. Navy.

The Rhode Island Airport Corporation operates one air carrier airport (T.F. Green in Warwick) and five general aviation airports serving all regions of the state and Block Island. Rhode Island Army and Air National Guard units are based at Quonset State Airport. At T. F. Green, a new terminal and parking facilities opened in 1996, and additional airline service followed. Since then, passenger traffic has grown dramatically, and new terminal and garage facilities are under way. RIDOT, RIAC and Amtrak are working jointly to develop a true intermodal transportation node at T. F. Green Airport by linking the Amtrak passenger rail service with the airport terminal by way of an automated people mover.

A new combined passenger train station/rental car facility with an elevated people mover link to the T. F. Green Airport terminal will be constructed and will be the first station design of its type. It is expected that this intermodal facility combining train, bus, auto, plane and interstate highway connections will serve as an important regional transportation hub.

Air quality benefits and reduction in traffic congestion will also result from this project. By promoting the use of both Amtrak intercity and MBTA commuter trains by passengers, the goal is to shift five to eight percent of the Airport's current auto traffic to rail. Inter-city and local bus service will provide up to a one percent shift in the Airport's auto traffic. The consolidation of the activities of nine rental car companies operating at the Airport into a 4000 space parking garage on top of the train station will result in significant reductions of shuttle bus and rental car traffic on roadways around the Airport.

Airline Passengers at T.F. Green State Airport



The following important terminals provide intermodal connections:

Northern Rhode Island

RIPTA hub (Woonsocket Depot**), Woonsocket
Visitors' Center*, Pawtucket

Metro Rhode Island

Amtrak-Providence Station
Kennedy Plaza, * **Providence

Central Rhode Island

T.F. Green Airport, Warwick

East Bay Rhode Island

RIPTA hub (Ames Plaza), East Providence
Newport Gateway Visitors' Center, * Newport

Southern Rhode Island

Quonset Point-Davisville, North Kingstown
Kingston Station, South Kingstown

RIPTA hub (Wakefield Mall), South Kingstown
Westerly Station, Westerly
Port of Galilee, Narragansett

* = major RIPTA hub

** = under construction/reconstruction

Some of these intermodal hubs are full service centers that have been created or improved in recent years. Others on the list provide minimal facilities at present and require upgrading. Many of these intermodal connections could serve as demonstration sites for recommendations made later in this plan aimed at improving intermodal transportation.